

D1 (d) plasma annealing said layer of metal nitride.

Sub E2 7
48. (Amended) A method for forming a barrier layer over a conductive surface surrounded by a channel having inner walls extending above said conductive surface, said method including the steps of:

- D2
- (a) depositing a layer of a refractory metal on said conductive surface and said inner walls of said channel to a thickness in a range of about 25 to 100 Å;
 - (b) depositing a layer of a metal nitride on said layer of said refractory metal;
 - (c) said metal nitride layer being of greater thickness than said layer of refractory material; and
 - (d) plasma annealing said layer of said metal nitride, wherein said layer of said metal nitride has a thickness extending from said layer of said refractory metal of less than 130 Å after completing said step (c).

REMARKS

Claims 21-23 and 25-52 are pending in this CPA application.

It is submitted that the claims are patentable over the art of record.

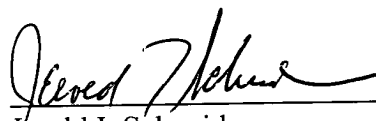
To the extent that the advisory action suggests or infers (page 2, paragraph bridging page 2 through page 3) that this feature would be obvious, such an inference is respectfully traversed. The mere fact that the ranges of thickness in the reference, when all possible permutations and combinations are considered, might encompass the presently claimed invention does not render the claims unpatentable since there is no teaching of the desirability of the relative thickness of one layer when compared to the other as set forth in the claims. This is particularly true since, in the primary reference to Bai, both layers have the same maximum proposed thickness. Thus, a fair reading of the primary reference in its entirety neither anticipates nor suggests nor makes

obvious the invention as presently claimed.

Accordingly, allowance of the pending claims is respectfully solicited.

Respectfully submitted,

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MARKED-UP COPY OF AMENDED CLAIMS

21. (Twice Amended) A method for forming a structure in an integrated circuit, said structure extending from a conductive surface through a channel having inner walls extending above said conductive surface, said method including the steps of:

(a) depositing a layer of a refractory metal on said conductive surface and said inner walls of said channel;

(b) forming a layer of a metal nitride on said layer of said refractory metal, wherein said layer of said metal nitride has a thickness extending from said layer of said refractory metal of less than 130 Å; [and]

(c) said metal nitride layer being of greater thickness than said layer of refractory material; and

(d) plasma annealing said layer of metal nitride.

48. (Amended) A method for forming a barrier layer over a conductive surface surrounded by a channel having inner walls extending above said conductive surface, said method including the steps of:

(a) depositing a layer of a refractory metal on said conductive surface and said inner walls of said channel to a thickness in a range of about 25 to 100 Å;

(b) depositing a layer of a metal nitride on said layer of said refractory metal; [and]

(c) said metal nitride layer being of greater thickness than said layer of refractory material; and

(d) plasma annealing said layer of said metal nitride, wherein said layer of said metal

nitride has a thickness extending from said layer of said refractory metal of less than 130 Å after completing said step (c).